CONSTRUCTION SPECIFICATION

PA 521B - DISPERSANT TREATED SOIL

1. SCOPE

The work shall consist of furnishing dispersant, mixing with soil, and placing the dispersant treated soil.

2. MATERIALS

Soil material shall be obtained from the designated area(s). The selection of the material shall be as described in the drawings or in Section 11 of this specification. Soil material shall contain no frozen material, sod, brush, roots, or other objectionable materials. Rock particles larger than 4 inches in diameter shall be removed prior to treatment operations.

Water shall be clean and free from oil, acid, alkali, organic matter, or other deleterious substances in amounts that will negatively affect the dispersant.

Dispersant shall meet the requirements detailed in the drawings or Section 11 of this Specification. Unless otherwise set forth in Section 11, 95% of the material shall pass a #30 sieve, and less than 5% shall pass a #100 sieve.

3. EQUIPMENT

All equipment necessary for the proper construction of the work shall be on the work site prior to the start of dispersant treatment operations. Unless otherwise specified, mixing equipment shall include the combined use of heavy disk plows and high speed rotary mixers. Disks shall be at least 24-inches in diameter and rotary mixers shall be capable of mixing lifts at least nine (9) inches thick traveling at a minimum speed of four (4) m.p.h. and covering a minimum width of six (6) feet.

All equipment used to convey or transport dispersant to or on the work-site shall be covered or enclosed so as to avoid dust related pollution or exposure problems.

4. SITE PREPARATION

The Contractor shall prepare, mix, and cure the dispersant treated earth material in the area(s) shown on the drawings.

Prior to start of dispersant treatment operations, the foundation shall be stripped of topsoil and graded to a relatively smooth and uniform surface.

All sod, brush, roots larger than 2 inch diameter and 4 inches in length, rocks larger than 4 inches in diameter, and other objectionable materials shall be removed from the foundation prior to dispersant treatment operations.

Immediately before placement of dispersant, the subgrade shall be scarified and moistened to create a water content that shall allow suitable mixing and reacting of the dispersant-soil mixture. Standing water or mud shall not be present during placement operations.

The foundation shall be inspected and approved by the Engineer prior to the placement of dispersant or earthfill.

In addition to the dispersant treated soil liner, at least 2 feet of compacted fine grained soil shall be placed over fractured rock or other highly permeable material.

5. DISPERSANT PROPORTIONING

The amount of dispersant shall be as specified in Section 11 of this specification. Adjustment in the amount of dispersant may be required as the work progresses and shall be adjusted as requested and approved by the Engineer.

6. DISPERSANT APPLICATION

Dispersant shall not be applied when the temperature is below 40^0F or is expected to drop below 40^0F within 24-hours. Dispersant will not be applied during high wind conditions that hinder effective application or causes

pollution by drift off site.

Method 1 : Dispersant shall be uniformly applied in dry form on the soil surface at a rate that will attain the specified proportioning and lightly sprinkled with water to minimize dusting and blowing.

Method 2: Dispersant shall be mixed with water to form a slurry prior to application to the soil surface. The slurry shall consist of a mixture of one ton of dispersant to a minimum volume of 500 gallons of water. Agitation shall be accomplished through integral paddles, re-circulating pumps or a combination of these devices. The dispersant and water shall be maintained as a uniform mixture until applied to the soil surface. The slurry shall be uniformly applied to the soil surface at a rate that will attain the specified proportioning. The slurry shall be applied under pressure through spray bars.

7. MIXING

The soil, dispersant, and water shall be mixed by disking and use of rotary mixers until a uniform mixture is obtained. During initial mixing with dry dispersant (Method 1), a minimum of two cycles of water application followed by mixing with disks and high speed rotary mixers shall be accomplished.

The depth of the lift for treatment shall be no greater than that depth that can be effectively mixed by the equipment or as limited in the drawing or Section 11. The cycle of watering and mixing shall continue until the soil, dispersant and water mixture has been thoroughly processed to a uniform mixture without lumps of soil and/or dispersant. When mixing is complete, the water content of the mix shall not be less than standard optimum water for the soil-dispersant mixture, when tested in accordance with ASTM D 698, Procedure A.

The mixing and compaction of dispersant, soil and water shall be completed within the same workday it is started.

8. PLACEMENT

Dispersant treated earthfill shall be placed in uniform layers on the subgrade. The thickness of each layer before compaction shall not exceed the maximum thickness specified in Section 11 or as shown in the drawings. Materials placed by dumping in piles or windrows shall be spread uniformly to not more than the specified thickness before being compacted.

During placement and compaction of the dispersant-soil mixture, the moisture content of the materials being placed shall be maintained within the specified range.

The water content of the mixture at the time of placement and compaction shall not be less than standard optimum moisture when tested in accordance with ASTM D 698, Procedure A.

9. COMPACTION

Dispersant-treated earthfill shall be compacted while it is still moist in accordance with the specified class:

Class A compaction: Each layer of earthfill shall be compacted as necessary to provide the density of the earthfill matrix not less than the minimum density specified in Section 11 or identified on the drawings. The earthfill matrix is defined as the portion of the earthfill material finer than the maximum particle size used in the compaction test method specified.

Class B compaction: Each layer of earthfill shall be compacted to a mass density not less than the minimum density specified.

Class C compaction: Each layer of earthfill shall be compacted by the specified number of passes of the type and weight of roller or other equipment specified or by an approved equivalent method. Each pass shall consist of at least one passage of the roller wheel or drum over the entire surface of the layer.

Structural backfill: Earth backfill adjacent to structures shall be compacted to a density equivalent to that of the surrounding in place earth material or adjacent required earth fill or earth backfill. Compaction shall be accomplished by hand tamping or manually directed power tampers, plate vibrators, walk-behind, miniature, or self-propelled rollers. Unless otherwise specified heavy equipment including backhoe mounted power tampers or vibrating compactors and manually directed vibrating rollers shall not be operated within 2 feet of any structure. Towed or self-propelled vibrating rollers shall not be operated within 5

feet of any structure. Compaction by means of drop weights operating from a crane or hoist is not permitted.

The top surface of the completed dispersant-soil mixture shall be sealed by rolling with a pneumatic tired equipment or a smooth steel roller.

10. CURING AND PROTECTION

The compacted dispersant-soil mixture shall be cured a minimum of 72-hours unless otherwise specified in Section 11. The water content of the mixture shall be maintained at or above standard optimum water content during the curing period by sprinkling the sealed surface with water or by covering it with a 6 inch layer of moist soil or another approved cover.

The dispersant-soil mixture shall be protected from damage and deterioration with a soil cover, as specified in the drawings or Section 11.

11. ADDITIONAL CONDITIONS WHICH APPLY TO THIS PROJECT ARE: